



Laboratory snags five R&D 100 awards

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“Oscars of Invention” recognize greatest innovations of 2009

Los Alamos, New Mexico, July 21, 2009— Los Alamos National Laboratory scientists won five of *R&D Magazine*’s 2009 R&D 100 Awards. Recognized as the “Oscars of Invention” by the Chicago Tribune, these awards honor the top 100 proven technological advances of the past year. Winning Laboratory projects are MagViz, the SIMTECHE CO₂ Capture Process, Lasonix, TeraOps Software Radio, and the Artificial Retina Project. “The Department of Energy’s national laboratories are incubators of innovation, and I’m proud they are being recognized once again for their remarkable work,” said Energy Secretary Steven Chu. “The cutting-edge research and development being done in our national labs is vital to maintaining America’s competitive edge, increasing our nation’s energy security, and protecting our environment. I want to thank this year’s winners for their work and congratulate them on this award.” “Congratulations to our R&D 100 winners, who pushed the frontiers

of science to create practical applications that will benefit the nation and the world," said Laboratory Director Michael Anastasio. "The awards are validation of the depth and breadth of the state-of-the-art science that takes place every day at Los Alamos National Laboratory." This year's awards bring the Los Alamos total to 111 since the Laboratory first entered the competition in 1978.

Speeding airport screening, increasing passenger safety MagViz will enhance passenger safety and speed airport security lines by making airline liquid restrictions obsolete. The technology leverages recent advances in ultra-low-field magnetic resonance imaging (MRI) to quickly scan even the tiniest amounts of liquids and classify them as dangerous or harmless. Michelle Espy of the Lab's Applied Modern Physics group and an interdisciplinary team developed the technology.

Revolutionizing electronics fabrication Lasonix, a novel process that uses lasers to grow micro- and nanoscale electronics, is poised to revolutionize the world of electronics. Lasonix creates three-dimensional electronic circuits, rather than circuit boards, and integrates a wide range of microelectronics through a single tool. Lasonix was developed by James Maxwell of Applied Electromagnetics, who won a 2008 R&D 100 award for his Laser-Weave™ technology, and his team.

CO2 Capture Process: Reducing greenhouse gases Efficient removal of carbon dioxide from coal syngas is a key technical challenge for next-generation power plants. The SIMTECHE CO2 Capture Process captures carbon dioxide emitted by fossil fuel power plants and other industrial operations and compresses it. The process is less energy and capital intensive than the technologies currently in use. Robert Currier of the Lab's Physical Chemistry and Applied Spectroscopy organization and SIMTECHE worked jointly under a cooperative research and development agreement to develop the technology.

Taking radio into space TeraOps Software Radio moves the concept of software-defined radio into space, where it can be used to extend dramatically the lifetimes of electronic systems aboard satellites and in space payloads. The components that make up the TeraOps Software Radio are compact, lightweight, cost-effective, and--most important--adapted from commercial off-the-shelf products. Mark Dunham of the Lab's International, Space, and Response group and Michael Pigue of Space Instrumentation Systems developed the technology.

Restoring sight through science Members of the Artificial Retina Project developed a bioelectronic implant that restores useful vision to patients blinded by retinal diseases. The project, funded by the Department of Energy's Cooperative Research and Development Agreement with Second Sight Medical Products, was jointly submitted by Los Alamos, Argonne National Laboratory, Lawrence Livermore National Laboratory, Oak Ridge National Laboratory, Sandia National Laboratories, Doheny Eye Institute at the University of Southern California, California Institute of Technology, North Carolina State University, the University of California at Santa Cruz, and Second Sight® Medical Products. John George of the Lab's Applied Modern Physics group led the Los Alamos team.

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